

Date: April 24, 2018

To: Mike Cirian, USEPA

From: Michael Ritorto, Roux
 CC: John Stroiazzo, Glencore
 Steve Wright, CFAC
 Dick Sloan, MDEQ
 Andrew Baris, Roux

Re: **Meeting Minutes for April 19, 2018**
Call to Discuss Responses to EPA/MDEQ Comments on Phase II SAP
CFAC Remedial Investigation / Feasibility

A conference call was held on Thursday, April 19, 2018 at 4:00 PM to discuss CFAC/Roux's responses to USEPA and MDEQ comments on the draft Phase II Site Characterization Sampling and Analysis Plan (SAP). The draft Phase II SAP was submitted to USEPA and MDEQ on February 28, 2018. CFAC/Roux received comments provided by USEPA and their consultant CDM Smith, and MDEQ on April 4, 2018, and comments from USEPA's risk assessors on April 12, 2018. The call was held to discuss the CFAC/Roux written responses to the initial USEPA and MDEQ comments, and to discuss a path forward for select comments that may affect the project schedule or scope. The following individuals attended all or portions of the meeting:

- Mike Cirian – USEPA
- Brian Sanchez – USEPA
- Sherry Skipper – USEPA
- Richard Sloan – MDEQ
- Gunnar Emilsson – CDM Smith
- Sean Coan – CDM Smith
- Erin Formanek – CDM Smith
- John Stroiazzo – Glencore
- Steve Wright – CFAC
- Andrew Baris – Roux
- Michael Ritorto – Roux
- Laura Jensen – Roux

CFAC/Roux provided a document that highlighted key comments and responses for discussion prior to the call. The key comments to be discussed included comments that could potentially affect the project schedule or scope of work, most notably, comments related to sampling design and temporal variability. A summary of the comments discussed and the proposed path forward for each comment is provided below. Comments provided by USEPA or MDEQ are shown in italicized text.

DISCUSSION OF COMMENT RESPONSES

General Comment - Conclusions are frequently drawn in Section 1 without proper justification. The text requires revision such that discussion of data collected to date is unbiased, assumptions are not made, and conclusions are not implied at this stage in the Site investigation.

As stated in the response to comments, Roux described that all conclusions in the Phase II SAP were stated in prior USEPA-approved data summary reports, with the exception of the temporal variability

discussion. USEPA requested that CFAC/Roux include a qualifying statement of that nature in the Phase II SAP. CFAC/Roux agreed and will revise the text accordingly.

General Comment - The sampling design and number of samples to be collected appears to be judgmental, but is not entirely clear based on portions of the text describing the utility of various sampling designs. Appendix D attempts to justify minimum sample counts needed, but the ultimate sampling design appears to invoke professional judgement in most cases. Provide clarification for how the sampling design was chosen and how it will result in adequate samples for use in site characterization and risk assessment.

CFAC/Roux and USEPA agreed that the sampling design outlined in the Phase II SAP is a judgmental sampling design that utilizes statistical inferences. USEPA's consultant CDM Smith questioned the sample count in fairly large exposure areas when considering small home range receptors. Roux described how the sampling plan was designed to consider small home range receptors (i.e., use of a conservative sampling design, bias samples downgradient of course areas and consideration of exposure pathways, point by point analysis, comparison of the maximum concentration to the minimum screening value). Roux further explain that Appendix D of the Phase II SAP described the sample count evaluation and how the approach was based on variability in the data, rather than exposure area size.

USEPA requested that CFAC/Roux summarize the sample count per exposure area in the text. USEPA's risk assessors requested that CFAC/Roux include a statement stating that variability from the entire dataset will be revisited in the risk assessment. CFAC/Roux will revise the Phase II SAP accordingly.

Section 1.1 (Page 1) – Because data quality objectives (DQOs) form the basis for a sampling design, it is recommended that the DQOs be presented prior to the field sampling plan (FSP).

USEPA agreed with CFAC/Roux's response and agreed that it was a non-critical issue. USEPA requested that references to the DQO section are included throughout the text. CFAC/Roux will revise the text accordingly.

Section 2.1.1 (pages 4-6, Surface Water) - Second bullet – It is inappropriate to presume that the reason cyanide was detected in surface water samples is because the detections "may be attributable to entrained sediment in the sample". This language should be removed.

CDM Smith raised concern that the quoted text draws a conclusion when rather, the exceedance could be related to variability in the data. USEPA remarked that we will continue to sample Cedar Creek for cyanide in Phase II and we will revisit this statement. No revisions to the text were suggested at this time.

Section 2.5.1 (Page 7) In addition, the discussion of temporal variability is largely focused on averages, when in fact, it is the characterization of extremes (highs and lows) that is also important. Provide text that describes an evaluation of the extremes for the Phase I-time period particular to the media type being discussed.

USEPA agrees to the proposed response. No additional changes are necessary.

Section 4.5 (Page 19, Nature and Extent of COPCs in Site Features, 1st paragraph, 5th sentence) – The sampling intervals presented includes a gap between 2 and 10 feet below land surface (bls) where no samples will be collected. Please add a sampling interval between 2 and 10 feet bls (e.g., 6 to 8 feet bls).

USEPA stated that it would be beneficial to sample the additional interval (i.e. 6-8 ft-bls) at a subset of locations in an effort to validate the argument that COPC concentrations decrease with increasing depth. CFAC/Roux agreed to collect the additional interval at a subset of Phase II locations.

Following a discussion internally, CFAC/Roux will propose the locations in their additional responses to USEPA comments and will revise the Phase II SAP accordingly.

Section 4.5 (Page 19) – Based on the text provided, it is assumed that only one replicate will be collected from each decision unit as was done in Phase I. EPA previously commented on the shortcomings of this approach (i.e., the mean concentration may be underestimated about half of the time). It was agreed that the intention of the Phase I sampling was to identify the key chemicals of concern at the Site and identify source areas and that evaluation of the appropriateness of this approach would be completed later. In moving to Phase II, the adequacy of using only one replicate needs to be demonstrated so that continuing with this approach is justified and so that use of samples collected with this approach may be used in the risk assessments without qualification.

USEPA agrees with the approach to conduct replicate sampling at four DUs (10% of the DUs). The approach and results of the extrapolation will be discussed in the Phase II Data Summary Report and will be revisited in the risk discussion as part of the risk assessment. The Phase II SAP will be updated accordingly.

Section 4.10.1 (Page 25, 2nd paragraph) – Please revise the section to state that surface water samples will be collected from the South Percolation Ponds and Backwater Seep Sampling Area in the low water season (October/November 2018) to characterize the between-year variability during this season. The low water season in 2017 could be considered a wet year when reviewing the data presented in Appendix A. Because concentrations of certain chemicals have been shown to be higher during drier periods, data collected during the low water season in 2018 may be useful in characterizing these conditions if 2018 is a dryer year.

CFAC/Roux discussed their response and USEPA and their consultant generally agreed. CDM Smith requested that revised Appendix A be updated to present the sample concentrations and discharge for the Backwater Seep Sampling Area during the sampling conducted as part of the Expedited Risk Assessment in the South Percolation Ponds. Roux will include the revised graphs in the additional responses to USEPA comments and in the Phase II SAP.

Section 6.5.2 (Page 45) – Question 4 estimation statement should include consideration of ecological receptor home ranges and how data collection will be designed to ensure adequate data are collected. It is stated that additional sampling will be conducted in each exposure area to confirm Phase I findings. It is unclear what steps will be taken if data differ from the Phase I findings and how this “confirmation” of findings will be performed.

USEPA requested that the language regarding daily doses of wildlife receptors be revised to indicate that the proposed approach to evaluating small home range receptors was a reasonable rather than a conservative approach. CFAC/Roux agreed to this revision, and the revised language will be included in the additional responses to USEPA comments.

Additionally, USEPA's consultant requested that the second paragraph of the response is updated to state that the data will be analyzed quantitatively. CFAC/Roux agreed and the language will be updated in the additional response to USEPA comments.

Section 6.5.6.1 (Page 47) – It is stated that “A statistically rigorous analysis of decision error limits and uncertainty is generally not feasible (or valid) when implementing a judgmental sampling program.” Consideration of this limitation is needed because one of the key objectives of this phase of sampling is to collect data that are adequate for risk assessment. To meet this objective, data should be collected such that a statistically rigorous analysis of decision error limits is possible.

USEPA's consultant raised concern that although some COPC concentrations do not exceed minimum screening values, if there are many concentrations that are close to exceeding, then it's likely that the data is variable and if more samples were collected, the concentrations may exceed.

CFAC/Roux understood USEPA's concern agreed to evaluate the variability in the data as part of the risk assessment.

Additionally, USEPA's consultant requested clarification about the language in the third paragraph of the response which references that COPCs will be selected on an exposure area basis; USEPA's consultant noted that earlier in the response it references that COPCs will be selected for the Site. CFAC/Roux clarified that we will be identifying a COPC at the Site utilizing the combined Phase I and Phase II dataset, but will perform the analysis in each exposure area.

Appendix D – While it is assumed that the ecological and human health benchmarks presented in the allowable error margin would be based on the minimum across the selected sources, the ecological values cannot be reproduced based on the values presented in the main text tables. Revise the main text tables and/or Appendix D as needed. For human health, the residential RSL has been included although it is not the minimum screening value for all chemicals. Rationale and justification for this approach is needed.

USEPA generally agreed with Roux's written response. However, USEPA's consultant did not agree with the "refined" screening values used in Appendix D, since it was discussed that refinement would be done as part of the risk assessment. CFAC/Roux will add qualifying language that the Appendix D analysis was performed solely as an exercise for the Phase II dataset and sample size adequacy; and, that the refined ESVs used in Appendix D have not yet been reviewed and approved by USEPA for use in the risk assessment. Refinement of ESVs for use in the risk assessment will need to be conducted as part of the risk assessment, and will be subject to USEPA review and approval. Roux will revise the response accordingly.

MDEQ Comment - Section 4.6 describes the installation of seven new monitoring wells. The DEQ recommends two additional wells to better define potential impacts on the western residential area (one midway between MW-057 and MW-059 and one 700 feet North of MW-057); the DEQ recommends three additional wells to better define the nature and extent of the cyanide/fluoride plume (one midway between MW-045 and MW-047, one 500 feet West of MW-054, and one 500 feet Northeast of MW-037). Thus 12 new wells (seven recommended by ROUX and five recommended by DEQ) would be installed, developed, and sampled.

CFAC/Roux stated the rationale for not installing the wells as discussed in the responses to comments. MDEQ expressed concern that the plume is not well-defined such that the data could be utilized as part of a feasibility study. MDEQ agreed that the plume definition may not be needed for a risk assessment, but would be needed for the feasibility study and stated it would be reasonable to install additional wells now since we are mobilizing. CFAC/Roux and USEPA agreed that additional wells could also be installed during the remedial design phase. USEPA requested that CFAC/Roux make a decision with the understanding that if they did not install the wells they could be required in a later phase. CFAC/Roux indicated they would inform USEPA of their decision.

PATH FORWARD

All other responses prepared by CFAC/Roux were agreed to by USEPA and MDEQ. CFAC/Roux will provide revised responses to comments and a revised Phase II SAP to USEPA for approval. USEPA will provide notice to proceed on an interim basis for field activities, and will provide a final approval pending the response and submittal of the revised Phase II SAP.

CFAC/Roux are still reviewing the USEPA's risk assessor's comments dated on April 12, 2018 and will provide responses to those comments before submitting the revised Phase II SAP.